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America's way of life seems threatened by unstable sources of energy, while many see growing evidence of environmental damage. As demands for energy escalate, both in this country and in rapidly developing nations, we may soon reach a point of no return. It is time to face the difficult choices that must be made to ensure a sustainable future.



>> The Energy Problem

Choices for an Uncertain Future

In 2005, after a decade without one, the United States adopted the Energy Policy Act of 2005, based on a report written by the National Energy Policy Development Group, led by Vice President Dick Cheney. This report issues a stark assessment: "A fundamental imbalance between supply and demand defines our nation's energy crisis."

Many people believe that it is time for America to make some difficult choices when it comes to energy. This goes beyond headline-grabbing gasoline pump prices and high heating and cooling costs. America's way of life seems threatened by unstable sources of energy, high prices, and growing evidence of harmful environmental impacts. Others would add that our national security is at risk of eroding because of where we obtain the oil that gives us most of the energy that powers our day-to-day lives.

Imagine war spreading across the Middle East, halting the flow of oil to our shores. Imagine terrorists attacking a major seaport where natural gas arrives in America to fuel our electric generators. Imagine a time, not too far from now, when another Katrina-sized hurricane knocks out our

ability to refine crude oil into gasoline—and the shutdown lasts months. Think about the resulting long gas lines, high home-heating prices, and regionwide blackouts. Think about how important energy is to daily life and think about just who might be affected by such sudden disruptions.

As if that were not bad enough, most scientists say global warming is in large part caused by emissions from fossil fuels, such as oil, coal, and natural gas. And, they say, it is already happening, even speeding up.

"As we peak in oil production and worry about how long natural gas will last, life must go on," testified Nobel laureate Richard Smalley to the United States Senate in early 2004. "Somehow we must find the basis for energy prosperity for ourselves and the rest of humanity for the 21st century."

But, as columnist Robert Samuelson writes in the *Washington Post*, "American energy policy is nothing if not shortsighted and self-indulgent.... The hallmark of U.S. energy policy is a steadfast refusal to confront choices."

Time to Face the Issue

It appears, though, that there may be growing agreement that it is time to face some of those choices. Many signs now point to a crisis when it comes to energy. According to journalist Frank Sesno:

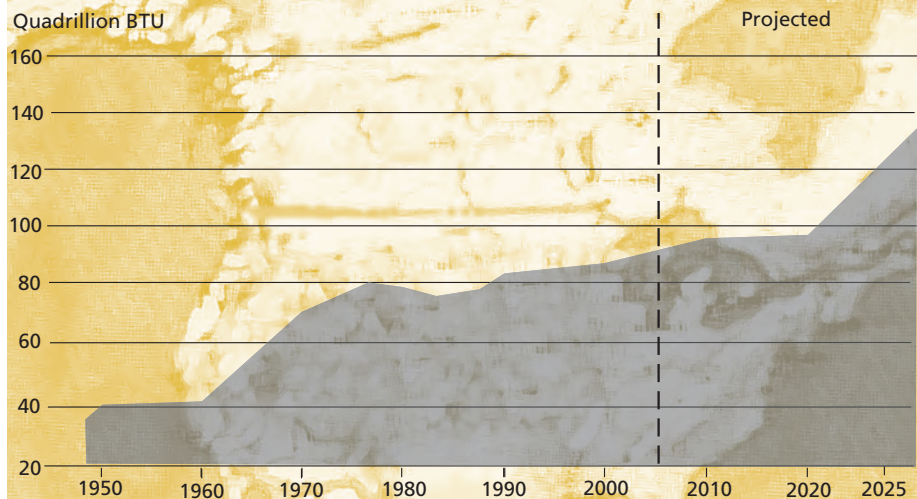
We'll need oil for a long time. There's a lot of it out there. But the supply chain is stretched thin and demand is growing rapidly. Environmental concerns deepen. We are vulnerable.... How long we have is the big question. It's time to get serious.

At the very least, there are decisions to be made, and made now. Hundreds of pieces of energy-related legislation are before Congress. The United States Supreme Court is considering a case that would classify carbon dioxide as an air pollutant, subject to regulation. Many nuclear power generation facilities are nearing the end of their life-expectancy, and we need to decide whether to build a new generation of power plants.

The choice America faces is not as easy as asking what type

of energy source we would like to use. The options involve significantly different futures, because they are rooted in different understandings of the problem. All of them mean that fundamental changes are in store. The public must have a voice in such a fundamental issue. This Issue In Brief provides a framework for public discussion of this question and for weighing the trade-offs involved. It revolves around three distinct approaches to the energy issue.

Americans' Appetite for Energy Keeps Growing



Source: Energy Information Administration

The National Issues Forums Institute

This issue book was prepared by the National Issues Forums Institute in collaboration with the Kettering Foundation. Books in this series are used by civic and educational organizations interested in addressing public issues. These organizations use the books in locally initiated forums convened each year in hundreds of communities. For a description of the National Issues Forums, log onto the Web site: www.nifi.org.

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Much of the oil Americans use comes from the Middle East and other politically volatile countries that cannot be relied upon to continue supplying our needs. This poses an ongoing threat to our security. The United States has many untapped reserves of oil and natural gas. Our best course of action is to make all possible use of these domestic energy sources.



AP/Wide World Photos

>> Unreliable Sources

Reduce Our Dependence on Foreign Energy

IN THE YEARS AFTER 1973, America was able to wean itself from foreign energy to some extent, but now more than half of America's daily intake of oil comes from overseas, some from countries that are openly hostile to the United States. We import significant amounts of natural gas, too. This, say proponents of Approach One, is an unacceptable and precarious situation for the nation. "We can't stand up to our enemies," writes Robert Zubrin, president of an engineering and research firm, in *The American Enterprise*, "because we rely upon them for the fuel that is our own lifeblood."

While proven reserves languish untouched within our borders, we send dollars out of the country, often importing energy from countries that don't much like the United States. What if a significant portion of this supply were cut off? What if there were civil unrest in Saudi Arabia or a change in policy in Venezuela? What if a war in the Middle East cut off most of the supplies from OPEC? Our day-to-day lives would go into a tail-spin. Proponents of Approach One say this is an unacceptable national security risk.

America is a country rich in natural resources. A number of them are effective energy sources and have been in use for decades. The United States possesses one-fourth of the world's known coal reserves. We also have significant amounts of natural gas (usually found near petroleum reserves) that we have not yet tapped into. Proponents of Approach One say we need to work harder at satisfying our need for energy from domestic sources, to minimize dependence on outside help. To do that we'll have to tap into our oil reserves and begin to rely more on other energy sources, too.

We cannot just rely on technological advances and more efficient methods of extracting and using energy, they say. This won't provide enough energy to move us seriously toward independence. Instead, we will have to find and exploit new resources.

Distant Shores

Just how reliant are we on foreign energy? Plenty. In 2005, we imported 13.5 million barrels of oil and other petroleum products a day. And

that's just oil. We also import natural gas to make up a shortfall of about 15 percent of our consumption.

Proponents of Approach One hold that looking closely at the list of nations from which the United States gets its energy should give anyone pause. Some would say it really is a rogue's gallery of unstable nations: Nigeria, torn by repeated civil war and corruption; and Venezuela (whose president, Hugo Chavez, said recently: "Enough of imperialist aggression; we must tell the world: down with the United States empire. We have to bury imperialism this century"). Approach One advocates say that reliance on such nations and leaders is dangerous and we can't afford it.

There is another reason to worry about reliance on imports for large portions of our energy diet. Very large countries, such as China and India, are developing at a rapid clip, and using significant amounts of energy as they do so. As their economies continue to grow dramatically, their need for oil and other forms of energy will grow, too. That means that, whereas America used to be able to count on being the biggest customer (and so deserving of preferential treatment) that may no longer be the case.

Proponents of Approach One say that, with major new customers for oil in the world marketplace, the United States must take stronger steps to safeguard its access to the energy and fossil fuels that its economy demands.

What Should Be Done?

There are a number of actions to take, say proponents of Approach One, in order to be more secure and independent when it comes to energy. They say that our best course of action is to maximize the energy we get domestically. They say that, while domestic sources may never fully replace foreign imports, they can be a bulwark against catastrophe. There are lots of promising places to look. Many parts of the nation are known to have oil, natural gas, or coal. The problem is that they are hard to get to, or are in areas considered environmentally sensitive.

Top 15 Suppliers of U.S. Oil Imports (2006)

Country	% of total U.S. Imports
Canada	16.1%
Mexico	12.2%
Saudi Arabia	11.3%
Venezuela	11.1%
Nigeria	8.5%
Iraq	3.9%
Algeria	3.5%
Angola	3.4%
Russia	2.9%
United Kingdom	2.9%
Virgin Islands (U.S.)	2.4%
Ecuador	2.1%
Kuwait	1.7%
Norway	1.7%
Colombia	1.4%

Source: Energy Information Administration, 2006

Proponents of Approach One suggest actions such as these:

- ^a Explore and exploit domestic sources of petroleum and other fossil fuels, including some wilderness and offshore areas where there are known reserves.
- ^a Use more coal and natural gas in electric-power generation.
- ^a Produce more flexible-fuel vehicles that can run on ethanol and natural gas.
- ^a Invest in liquefied coal.
- ^a Build more domestic refining facilities.

>> Trade-Offs and Criticisms

- The environmental risks represented by large-scale oil and natural gas exploration are too extreme.
- If we expand our use of the nation's abundant coal reserves, the results of coal mining will be unsightly and damaging to the landscape.
- Most of our oil does not come from unstable nations. In fact, it comes from our neighbors Canada and Mexico—hardly regimes of oppression or terrorist states.
- Overreliance on fossil fuels is already producing severe and lasting consequences. More domestic sources of oil and natural gas are the last thing we need.

The escalating use of fossil fuels is wreaking havoc on our environment. Most scientists agree that global warming has begun in earnest and unless we slow down the burning of fossil fuels, we face catastrophic climate changes. We must get serious about developing alternative energy sources, such as wind farms and solar power, and rethink the use of another clean energy source—nuclear power.



AP/Wide World Photos

>> Get Out of the Fossil-Fuel Predicament

SINCE DETAILED RECORDS began to be kept in 1850, the average temperature on Earth has increased steadily, save for a pause from roughly 1940 to about 1976. The five warmest years in recorded history have occurred since 1998. And it may well get much worse, according to proponents of Approach Two. Scientists predict that the earth's average surface temperature will rise anywhere between two and ten degrees Fahrenheit in the next fifty years.

Proponents of Approach Two say that we are running out of time. Our reliance on fossil fuels to satisfy our need for energy has caused global warming to begin in earnest. Burning fossil fuels generates carbon dioxide (CO₂) which causes the problem. We have got to start using something else as our main energy source. This will be a big change, but we must get serious about it.

A new generation of alternative, clean-burning energy sources promises a real, long-term solution. But despite repeated proclamations of our resolve to move toward renewables, this nation has only taken baby steps in that direction. This,

say Approach Two proponents, must change.

"What is needed," according to U.S. Senator Richard Lugar, "is an urgent national campaign led by a succession of presidents and Congresses who will ensure that American ingenuity and resources are fully committed to this problem."

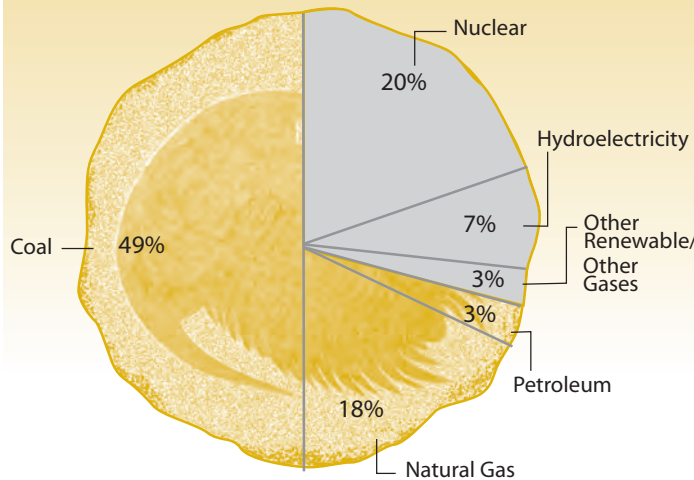
The Alternatives

It will be hard to move away from such heavy dependence on fossil fuels. America gets 85 percent of its energy from these sources. That can't be changed overnight. But, say proponents of Approach Two, there are viable, useful alternative sources of energy that we have not even begun to consider seriously, let alone made the investments necessary to foster their widespread use.

As opposed to fossil fuels, which are limited, these alternative sources of energy are called *renewable*. They are not depleted by use, or their source is such that the fuel is constantly replenished. The chief forms of renewable energy are wind, water, the sun, the heat of the earth, and biological sources.

70% of U.S. Electric Power Is Generated from Fossil Fuels

Sources of Electric Power, 2004



Source: Energy Information Administration

Nationally, wind turbines produce enough power to serve 1.6 million households. That would power a city the size of Philadelphia, Pennsylvania. The earth itself produces heat that can be used to generate electricity. Many people are familiar with electric solar panels, which can provide limited amounts of electricity converted directly from the sun. The sun can also be used to heat water which can then heat individual households.

All of these sources, and more, ought to be tried, say proponents of this approach. And they ought to be given serious consideration along with real financial resources.

The Nuclear Option

Another clean energy source, insofar as it produces no emissions, is nuclear energy. While transportation accounts for most of America's fossil-fuel use, power generation is a very significant part as well. Most power plants are fueled by coal, which is by no means a clean energy source, although strides have been made in recent years to make its emissions less harmful.

Using nuclear energy to create electricity is an attractive option. Nuclear energy produces no harmful emissions and is cheap, and plentiful. Experts say that today's new generation of nuclear reactors are much safer than the 104 that are currently part of America's energy production system.

Nuclear power accounts for 20 percent of America's electricity production, but advocates say this could be increased a great deal.

Even Patrick Moore, a cofounder of the environmental group Greenpeace, who for thirty years opposed nuclear energy, now says:

Nuclear energy is the only large-scale, cost-effective energy source that can reduce carbon emissions while continuing to satisfy a growing demand for power.... Every responsible environmentalist should support a move in that direction.

What Should Be Done?

All these and more options need to be explored seriously, say proponents of Approach Two. They suggest actions such as these:

- Substantially increase direct government investment in alternative, renewable sources of energy.
- Sign and abide by the Kyoto Protocol (a global treaty to reduce CO₂ emissions, which the United States has not signed).
- Build and use more nuclear power plants.
- Provide government support to encourage sales of alternative energy technology (such as wind power) by agreeing to purchase a certain amount.
- Seek out zero-emission alternatives in our personal lives, such as using an electric mower to cut grass, taking public transportation, or walking instead of driving.

>> Trade-Offs and Criticisms

- People will need to buy different products, some of which may be more expensive or less convenient than present choices.
- Certain new technologies, such as hydrogen fuel cells or high-efficiency solar power, will have to be heavily supported by government funding until they are thriving on their own and can give true competition to fossil fuels.
- There is still no adequate long-term answer to what to do with nuclear waste.
- This approach ignores that there are real-world, simple and effective measures, such as increasing energy efficiency, that can be taken right now and that have been proven to work.

We are missing the point when we go looking for new sources of energy. What we need to do is find ways to use less energy in the first place or to use it more efficiently. The United States is home to less than 5 percent of the world's population but uses more than 20 percent of its energy. Cutting back on consumption is the cleanest and most workable way to deal with impending shortages.

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>> Curb Our Appetite

Reduce Our Demand for Energy

Our way of life is based on a foundation of personal consumption. According to proponents of Approach Three, when we go looking for new sources of petroleum or ponder new, renewable sources of fuel to replace gasoline, we are missing the point. Instead, we need to become far more efficient about how we use energy in the first place. Demand is the *only* thing that is in our control when it comes to the energy equation. Proponents of Approach Three say that we must get far more serious than we have yet been about energy efficiency and even about moderating our consumption. This is not just a “good thing to do,” it is crucial to our future.

The world is amazed at what we in America consume. From super-sized meals to giant homes to big-box stores to gargantuan cars, our nation seems to go after life with gusto. Much of that consumption is of goods and services that require energy. According to the Consumer Electronics Association, factory sales of consumer electronic goods more than doubled between 1990 and 2003.

All of this consumer activity takes place on a platform of hitherto cheap, abundant, plentiful energy—all kinds of energy, but mainly oil, natural gas, and coal. But oil is a finite resource and the planet is beginning to run out of it. Many scientists say that oil production across the globe has either peaked or is about to.

A Practical Response

Increasing energy efficiency has begun to make more sense to a broader cross-section of America, say proponents of Approach Three. For Approach Three advocates, the chief arguments in its favor are quite pragmatic: energy efficiency works.

Energy may have to get more expensive through higher fuel taxes, say proponents of this approach. After 1973, when oil prices began to climb dramatically, U.S. energy consumption slowed down somewhat. Proponents of Approach Three say it was higher oil costs that

spurred people to save energy.

While the most visible American energy use occurs on our nation's roads, advocates for reducing energy consumption say there are other areas where citizens can trim back. One such area is the broad category of consumer goods. Many things that Americans buy take energy to function—from refrigerators to computers to televisions. In 1992, the government began the "Energy Star" program as a way to encourage reduced energy usage. According to the Environmental Protection Agency, which runs the Energy Star program, it has saved Americans over \$10 billion since it began and saved enough energy to power 25 million homes at peak power.

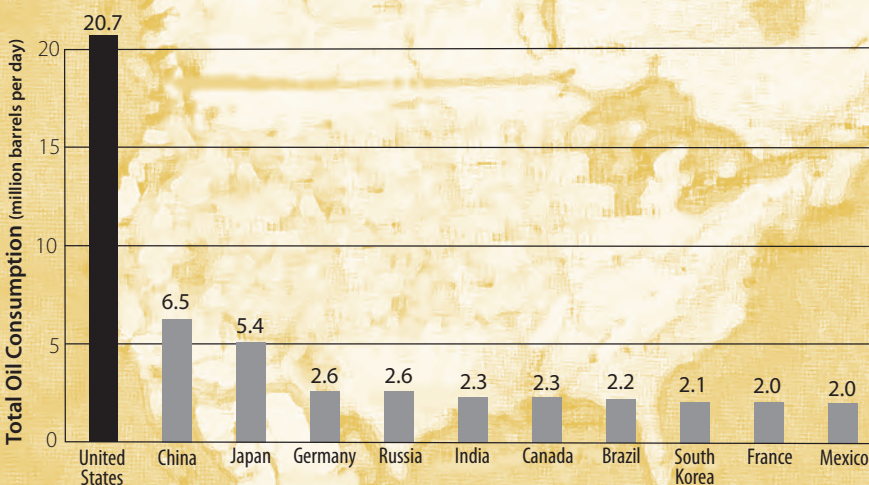
What Should Be Done?

But make no mistake, say proponents of Approach Three, this path calls for real change. They suggest such actions as these:

- Create (and enhance) tax incentives for conservation and reduced use of fossil fuels.
- Significantly increase gasoline taxes.
- Give government agencies more enforcement powers to ensure certain levels of energy efficiency and conservation.
- Enhance and increase industry initiatives, such as the Energy Star program, and boost the fuel economy standards for the auto industry.
- Pour much more money and effort into public awareness campaigns similar to those mounted against smoking or drunk driving.
- Impose a "carbon tax" on CO₂ emissions.

U.S. Oil Consumption in Perspective

Top World Oil Consumers, 2004



Source: Energy Information Administration

>> Trade-Offs and Criticisms

- We would be obliged to live with new rules and regulations that require people to moderate their energy use—it can't be voluntary.
- Daily life would change as homes are cooled less in the summer, we make fewer trips to the store, and public places reduce their use of energy-intensive amenities.
- Any savings we may be able to eke out by turning down our thermostats will be far overshadowed by population growth.
- It is overly optimistic to think that such gains in energy efficiency as were experienced in the 1970s and 1980s are still possible. The easiest and lowest cost efficiency gains have already been achieved.
- Solutions that rely on people changing their basic nature are unworkable.



The Kettering Foundation, a nonprofit, nonpartisan research institute based in Dayton, Ohio (with offices in Washington, D.C. and New York), was founded in 1927. It has provided books, materials, and moderator training for the National Issues Forums which celebrated its twenty-fifth anniversary this year. For information about the Kettering Foundation, please visit www.kettering.org or contact the foundation at 200 Commons Road, Dayton, Ohio 45459-2799. Phone: 800-221-3657.

Each book in this series for the National Issues Forums outlines a public issue and several choices or approaches to addressing the issue. Rather than conforming to any

single public proposal, each choice reflects widely held concerns and principles. Panels of experts review manuscripts to make sure the choices are presented accurately and fairly.